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I, LEANNE MYNOTT, MANAGER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2003906094 for a patent by SAVE THE WORLD AIR, INC. as filed on 04 November 2003.



WITNESS my hand this  
Nineteenth day of November 2004

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## EMISSION CONTROL DEVICES

### Technical Field

The present invention relates to emission control devices.

5

### Background Art

It is now accepted that the treatment of a body of liquid with magnetic fields is capable of providing varying beneficial effects.

Magnetic devices for treating fuels have been proposed in the past and descriptions of such devices can be found in:

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- International Patent Application No. WO 99/23381
- United States Patent No. 5558765
- United States Patent No. 5161512
- International Patent Application No. WO 00/31404.
- Australian Patent Application No. 2001258057

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Authorities throughout the world are moving to encourage efficiencies of petrol and diesel engines including non-road engines and in particular regulating to encourage manufacturers to reduce harmful emissions from engines.

Most modern motor vehicles are fitted with petrol injection systems, either mechanical or electronic.

20

In such system, injectors open to spray fuel into an airstream in an inlet duct in a fuel rail.

Fuel rails for modern injection systems are accessible and accordingly, provide a site to mount a treatment device.

25

It is an object of the present invention to provide a device and methodology for treating fuels via the fuel rail of a fuel injection system with a view to reducing harmful emissions.

Further objects and advantages will become apparent from the ensuing description which is given by way of example only.

### Disclosure of Invention

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According to the present invention, there is provided an emissions control device comprising

- (a) an elongate body providing a plurality of channels therein

having angularly orientated open faces,

(b) a plurality of permanent magnets positioned in the channels having polar axis orientated to create magnetic fields directed at a common site adjacent to the body.

5 The open faces are radially spaced at approximately 120 degree intervals.

The device may include a tubular cover which houses the body and provides an opening common with the common site.

10 Magnets mounted in a first of the channels may be neodymium iron boron magnets.

Magnets mounted in a second and third channels may be ferrite or neodymium iron or boron magnets.

The cover may be fabricated or moulded from aluminium tubestock.

15 According to the present invention, there is provided a method of treating air fuel/fuel mixtures of an engine having a fuel injection system comprising mounting a device as aforesaid coaxially with a fuel intake rail of a fuel injection system.

The device may be mounted externally of the fuel rail.

The device may be mounted within or partially within the fuel rail.

20 **Brief Description of the Drawings**

Aspects of the present invention will now be described with reference to the accompanying drawings in which:

FIGURE 1 is an exploded perspective view of an emissions control device according to one possible embodiment of the present invention, and

25 FIGURE 2 is an end/sectional view of the emissions device of Figure 1 applied to the fuel rail of an injection system, and

FIGURE 3 is a diagrammatic perspective view of the device of Figure 1 applied to the fuel rail of an injector system of an engine.

30 With respect to the drawings, a device according to the present invention can comprise an elongate body generally indicated by arrow 1, the body providing a plurality of channels 2 therein, each having angularly orientated open faces 3.

A plurality of magnets generally indicated by arrow 4 are positioned in the channels having polar axes as indicated which create magnetic fields directed at a common site adjacent to the body.

The open faces are radially spaced by approximately 120 degrees.

5 The device may include a tubular cover 5 which houses the body 1 and provides an opening 6 common with the common site.

The device is mounted on a common fuel rail 7 (see Figures 2 and 3) which defines the common site for the magnetic field.

The magnets may be separate magnets or may be in bar form.

10 The magnet types may vary, for example, the magnets in a first of the channels 8 may be neodymium iron boron magnets whilst magnets in channels 9 and 10 may be ferrite magnets of lesser strength.

Voids within the interiors of the cover may be filled or partially filled with a non-magnetic filler e.g. an epoxy.

15 Whilst the device of the present invention is primarily concerned with reducing the level of undesirable emissions from engines, it is likely that it will also reduce fuel consumption.

20 The magnetic field applied to a fuel line is directly applied to fuels by the magnets immediately adjacent the fuel line. It is supposed that the magnetic lines of flux from the magnets immediately adjacent the fuel line deflect and spread throughout the cross-section of the fuel line and the effect of the stronger magnet is to assist the process.

25 It is also supposed that an alignment of the carbon chains in the fuel in a specific way takes place. Testing has indicated that with specific magnetic field alignment the viscosity of the liquid fuel is affected.

Aspects of the present invention have been described by way of example only and modifications and additions thereto may be made without departing from the spirit or scope thereof.

DATED this 4<sup>th</sup> day of November 2003

30 SAVE THE WORLD AIR, INC.

By its Patent Attorneys

Cullen & Co.

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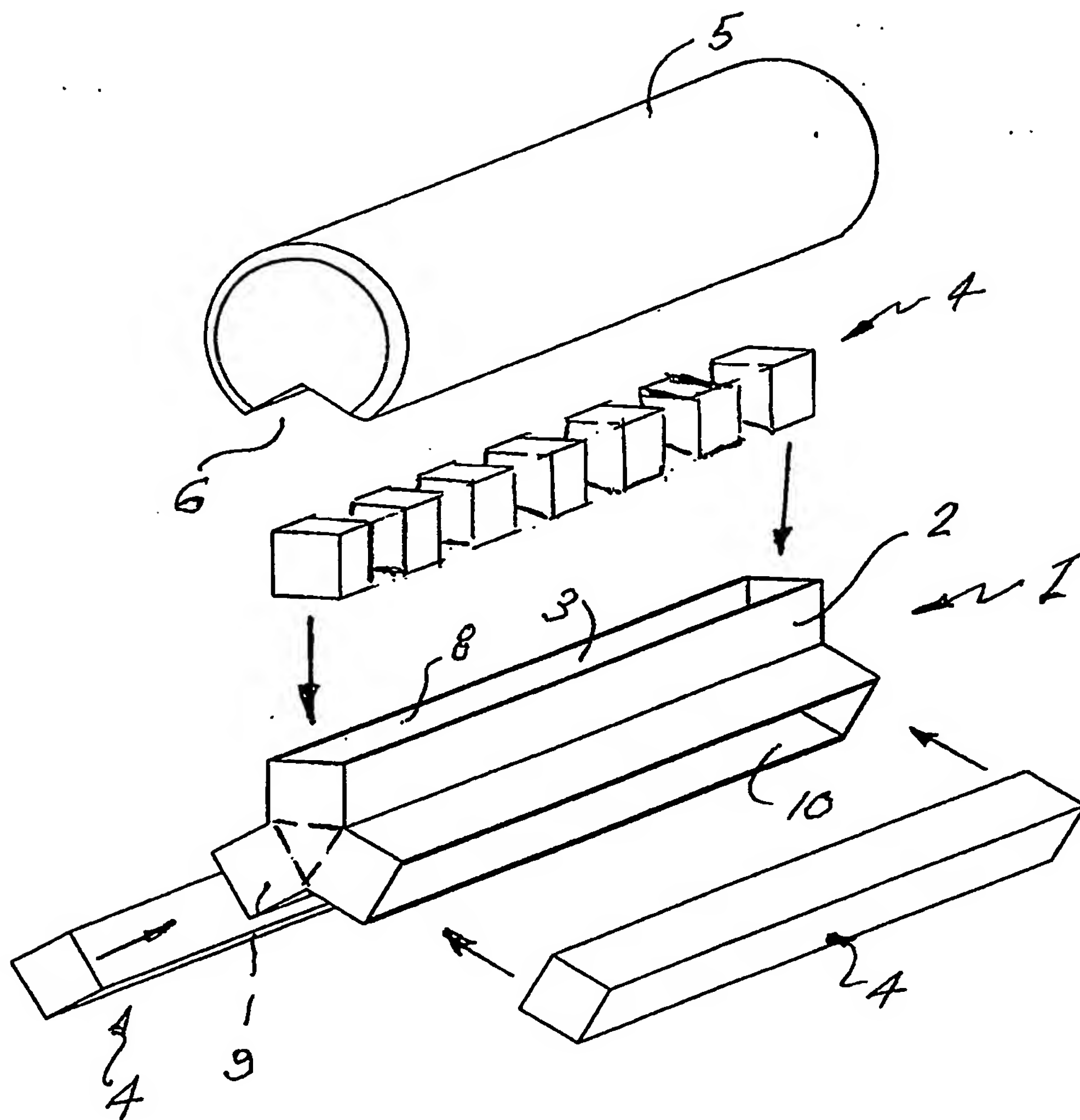


FIG-1

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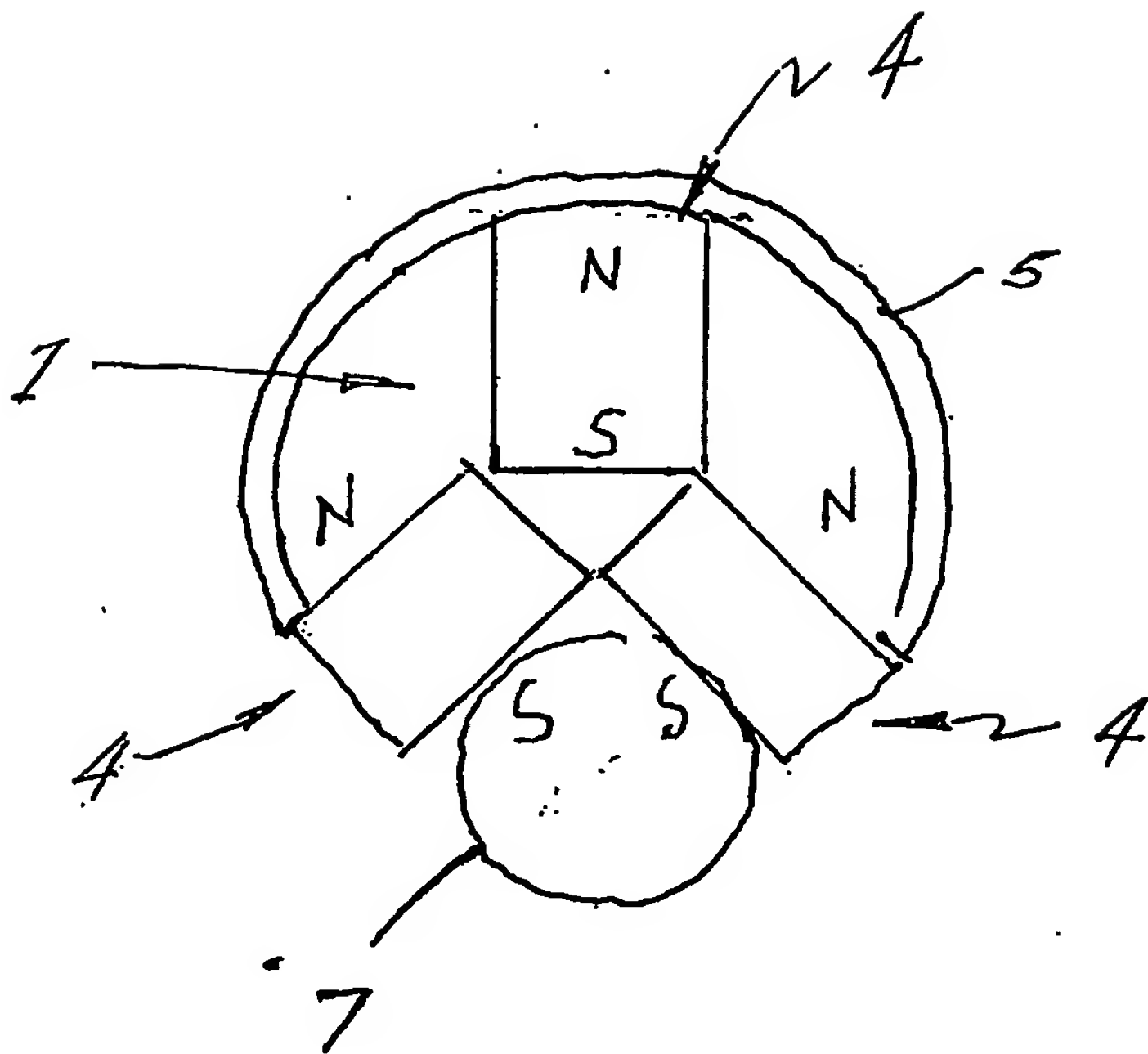


FIG. 2

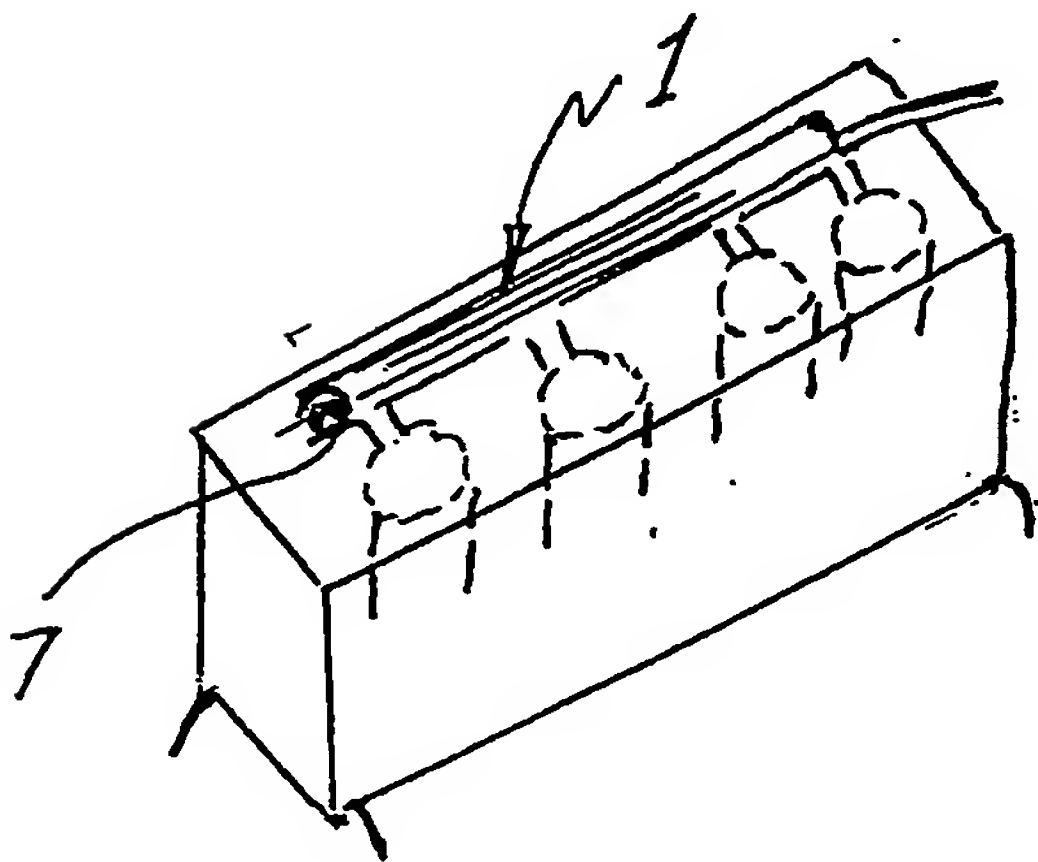


FIG. 3

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